



Practitioner's Docket No. 012567-2

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Suman Preet Singh Khanuja, et al.

Serial No.: 09/487,405

Group No.: 1655

Filed: January 18, 2000

Examiner: A. Chakrabarti

For: A NOVEL SCREENING METHOD FOR SELECTION OF INSECT TOLERANT PLANTS

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RESPONSE UNDER
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AMENDMENT OR RESPONSE AFTER FINAL REJECTION-FIRST PAGE

In the response to the Final Office Action of October 24, 2001, please consider the remarks below:

CERTIFICATION UNDER 37 C.F.R. 1.8(a) and 1.10*

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REMARKS

The Office Action of October 24, 2001 has been carefully considered and reconsideration of the application as amended is respectfully requested.

Claims 6-13 are pending in the application. Claims 6-13 were rejected.

Claim Rejection 35 U.S.C. 103(a)

Claims 6-7 and 10-13 were rejected under 35 U.S.C. 103(a) as being unpatentable over Sondahl et al. (U.S. Patent No. 5,436,395) in view of Gilbert et al. (U.S. Patent No. 6,187,999 B1) further in view of Jones et al. (Journal of Economic Entomology (1979), vol. 72, pages 628-632). The Examiner again alleges that it would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to substitute and combine the forced feeding of insects by releasing actively feeding larvae or nymphs and checking for insect larval non-preference of Jones et al. with the novel method of induction and selection of somaclonal variation in plants of Sondahl et al. in view of Gilbert. Applicants respectfully disagree.

Claims 6-7 and 9-13 were rejected under 35 U.S.C. 103(a) over Sondahl et al. (U.S. Patent No. 5,436,395) in view of Gilbert et al. (U.S. Patent No. 6,187,999 B1) further in view of Jones et al. (Journal of Economic Entomology (1979), vol. 72, pages 628-632) and further in view of Prajapati et al. The Examiner alleges that it would have been obvious to one skilled in the art at the time the invention was made to substitute and combine the insect larvae *Spilarctica obliqua* of Prajapati et al. with the novel method of induction and selection of somaclonal variation in plants of Sondahl et al. in view of Glibert further in view of Jones et al. Applicants respectfully disagree.

Claims 6-8 and 10-13 were rejected under 35 U.S.C. 103(a) over Sondahl et al. (U.S. Patent No. 5,436,395) in view of Gilbert et al. (U.S. Patent No. 6,187,999 B1) further in view of Jones et al. (Journal of Economic Entomology, (1979), Vol. 72, pages 628-632) further in view of Kumar et al. (U.S. Patent No. 5,898,001). Applicants respectfully disagree.

None of the references relate to an *in vitro* screening method for identifying insect tolerant genotypes or clones at the somaclonal variant stage.

The method of the present invention comprises the steps of detecting molecular

variation of somaclones using RAPD analysis at the in vitro stage, selecting the somaclones with molecular variation, exposing these somaclones to insect larvae or nymphs and identifying the surviving somaclones. The surviving somaclones may be grown into adult insect tolerant plants. The surviving somaclones may also be grown in vitro and again exposed to insect larvae of nymphs. The method of the present invention is novel over the cited prior art *inter alia* in that the screening takes place prior to growing the plants.

Applicants also believe that the Examiner's conclusions of obviousness were based on improper hindsight reasoning, *In re McLaughlin* 443 F.2d 1392, 1395, 170 USPQ 209, 221 (CCPA 1971).

In making its obviousness determination, a court must view the prior art without reading into that art the patent's teachings, *Vandenberg v. Dairy Equipment*, 224 U.S.P.Q. 195 (fed. Cir. 1987) citing *In re Spinnoble*, 160 U.S.P.Q. 237 (CCPA 1969). In *Uniroyal v. Rudkin-Wiley*, 50 U.S.P.Q.2d 1434, 1438 (Fed. Cir. 1988) the CAFC stated:

The obviousness standard, while easy to expound, is sometimes difficult to apply. It requires the decision maker to return to the time the invention was made. The invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time... When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself.

The state of the art at the time the cited prior art references existed did not teach or suggest an in vitro screening method for identifying insect tolerant genotypes or clones by detecting molecular variation of somaclones using RAPD analysis in vitro.

Sondahl et al. describes a method for the generation of somaclonal variants from a explant of the genus *Coffea* comprising: a) inducing formation of somatic embryos from said explant; b) inducing formation of coffee plants by somatic embryogenesis from said embryos; and c) screening said plants for off-parental characteristics. The screening method described in Sondahl et al. is large scale field screening and occurs after the plants are grown in a nursery or field conditions (see col. 13, lines 61-63). Sondahl et al. describe the screening process as extending over one or more growing seasons and for thousands of plants or plantlets, (See col. 14, lines 17-27). The screening process described in Sondahl et al. is not concerned with screening at the in vitro stage as claimed in this application.

Gilbert et al. relates to an in-bred corn line and a method of developing this line. Techniques for analysis of genotype such as RFLP, RAPD, AFLP, SCAR, etc, are disclosed on col. 5, lines 45 to 60. Out of the various techniques mentioned, Gilbert et al. select RFLP's as having the advantage of revealing an exceptionally high degree of allelic variation in corn.

Applicants are not claiming the RAPD technique rather Applicants are claiming a method using RAPD. Furthermore, Gilbert et al. do not teach or suggest using RAPD analysis at the in vitro stage for identifying insect tolerant genotypes or clones.

The Jones et al. reference discloses screening soybean lines for resistance to pentatomid pests. This reference discloses using commercial cultivars which are known for their insect resistance (see page 628 col. 1, lines 9-12 and page 631 col. 1, lines 6-9). These cultivars were grown in the field and tested for resistance to the southern green stink bug. The Jones et al. reference do not teach or suggest a method to screen for and then grow insect tolerant plants.

The Prajapati et al. reference relates to anti-insect properties of the root extract of *c.roseus* using *Spilarctia obliqua*. Prajapati et al. does not correct the deficiencies of the primary references.

Kumar et al. describe a method for regenerating viable and fertile mint plants by tissue culture. Kumar et al. do not correct the deficiencies of the primary references.

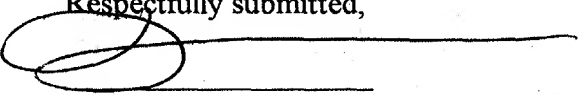
To establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. As stated above, Sondahl et al. do not teach or suggest an in vitro screening method useful for the selection and development of an insect tolerant genotype or clone, Gilbert et al. do not teach or suggest using RAPD analysis at the in vitro stage for identifying insect tolerant genotypes or clones and Jones et al. do not teach or suggest a method for developing insect tolerant plants. Therefore, without the proper motivation or suggestion, the cited prior art references cannot be combined. Furthermore, if the references were to be combined, the combination would not teach the method of the present invention for the development of insect tolerant

plants by screening at the tissue culture stage.

In regard to the dependent claims, claims introduce additional limitations to what is defined in claim. Applicants expect all these claims to be allowed in claim is allowed.

In light of the above, Applicants submit that all rejections and objections of record have been overcome. Applicants accordingly submit that the application is now in condition for allowance and respectfully request action in accordance therewith.

Respectfully submitted,



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